

## Shock

Most people think of 'shock' as emotional distress or sudden fright in response to a traumatic event. However, in medical terms, shock is when you do not have enough blood circulating around your body. It is a life-threatening medical emergency.

A decrease in blood pressure reduces the flow of oxygen and nutrients to vital organs such as the brain, heart and lungs. If the blood flow is not promptly restored, the person may die from complications due to lack of oxygen supply to major organs (hypoxia). Some of the many causes of shock include uncontrolled bleeding, severe burns and spinal injury.

### Shock is a defence response

In medical terms, shock is the body's response to a sudden drop in blood pressure. To begin with, the body responds to this life-threatening situation by constricting (narrowing) blood vessels in the peripheries of the body. It does this to conserve blood flow to the vital organs – this is known as vasoconstriction. Adrenaline is also released and this can reverse the body's initial response. When this happens, the blood pressure drops and this could prove to be fatal.

Shock occurs in varying degrees, depending on the health of the person, their age, gender and personality and many other factors.

In the case of emotional distress or sudden fright, adrenaline is released into the bloodstream but this usually reverses itself in a healthy person. This is where the confusion in the term 'shock' sometimes occurs. 'Non-medical shock' is an anxiety or fear response. Although the symptoms can mimic those of medical shock, this 'fright-flight' response is short lived and symptoms will disappear once the person is comforted or the reason for the fright or fear is removed.

### Signs and symptoms of shock

Depending on the cause, some of the symptoms and signs of shock may include:

- Pale, cold, clammy skin
- Shallow, rapid breathing
- Difficulty breathing
- Anxiety
- Rapid heart beat
- Heart beat irregularities or palpitations
- Thirst or a dry mouth
- Low urine output or dark urine
- Nausea
- Vomiting
- Dizziness
- Light-headedness
- Confusion and disorientation
- Unconsciousness.

### Different types of shock

Some of the different types of medical shock include:

- **Hypovolaemic** – this means not enough blood volume. Causes include bleeding, which could be internal (such as a ruptured artery or organ) or external (such as a deep wound) or dehydration. Chronic vomiting, diarrhoea, dehydration or severe burns can also reduce blood volume and cause a dangerous drop in blood pressure.
- **Cardiogenic** – caused when the heart cannot effectively pump blood around the body. Various conditions including heart attack, heart disease (such as cardiomyopathy) or valve disorders may prevent the heart from functioning properly.
- **Neurogenic** – a spinal injury may damage the nerves that control the diameter of blood vessels, such as arteries. The blood vessels below the spinal injury relax (dilate) and cause a drop in blood pressure.
- **Septic** – an infection causes the blood vessels to dilate (expand), which drops blood pressure. For example, an *E. coli* infection may trigger septic shock.
- **Anaphylactic** – a severe allergic reaction that causes blood vessels to dilate, which results in low blood pressure.
- **Obstructive** – means that blood flow is stopped. Various causes of obstructive shock include cardiac tamponade (an abnormal build-up of fluid that compresses the heart and stops it from beating properly) or pulmonary embolism (a blood clot in the pulmonary artery, which blocks the flow of blood to the lungs).
- **Endocrine** – in a critically ill person, a severe hormonal disorder such as hypothyroidism may stop the heart from functioning properly and lead to a life-threatening drop in blood pressure.

## First aid

Medical shock is a life-threatening emergency. Effective first aid and prompt medical attention can save a person's life. First aid management suggestions include:

- Do not put yourself or anybody else in danger – this can include environmental hazards, such as a fire.
- Get help. **Call triple zero (000) for an ambulance.** Do not wait for the person's condition to improve or worsen.
- Lie the person flat and keep them warm and comfortable. Loosen clothing.
- If the person is unconscious, check breathing and pulse. Begin cardiopulmonary resuscitation (CPR) if needed.
- If the person is **breathing but unconscious**, gently roll them onto their side with their face angled to the floor. This is so they don't inhale vomit, saliva or blood. Even if you suspect the person may have a spinal injury, a clear airway is more important so you must roll them onto their side.
- If the person is conscious, try to raise their legs above the level of their torso and head (to improve blood flow to the brain, heart and lungs). However, do not elevate the legs if you suspect a spinal injury or if moving their legs causes pain.
- Manage any obvious signs of external bleeding. For example, firmly press a clean cloth or pad against a wound to stop blood loss. If blood seeps through and soaks the cloth, do not remove it. Add another cloth or pad over the top of the first one. If the second cloth or pad is soaked, remove and replace with another clean cloth or pad. Continue maintaining firm pressure against the wound. Raise the bleeding injured limb if possible.
- Do not give the person anything to drink, even if they are very thirsty.
- Reassure the person and encourage them to rest or stay still. Stay with them until the ambulance arrives.

Please note that the above suggestions are **not** a substitute for first aid training. Refer to the **Where to get help** section of this fact sheet for organisations that offer first aid courses. Your training may save a life.

## Diagnosis

In all cases of medical shock, treatment aims to restore the blood circulation and manage or prevent complications. When the person reaches the emergency department of the nearest hospital, efforts to secure their airway and boost blood circulation are often made before the final diagnosis.

In some cases (such as stab wounds, severe burns or traumatic amputation), the cause of shock is obvious. In other cases, once the patient is out of immediate life-threatening danger, diagnostic tests may be needed to help hospital staff to figure out the cause of the person's low blood pressure.

Tests may involve:

- Blood tests
- X-ray examinations
- Ultrasound, CT scan or MRI scan (to check for internal bleeding)
- Other tests, depending on the type of shock suspected – for example, diagnosis of cardiogenic shock may involve various tests such as an electrocardiogram (ECG).

## Treatment

Specific treatment depends on the type of shock, but could include:

- **Hypovolaemic** – stop the bleeding and boost blood volume with intravenous fluids. A blood transfusion may be needed in severe cases. Internal or external wounds may require surgical repair.
- **Cardiogenic** – boost blood volume with intravenous fluids. Drugs may be used to constrict the blood vessels and improve the heart's ability to pump. Heart surgery may be needed in some cases.
- **Neurogenic** – intravenous fluids, and drugs including corticosteroids.
- **Septic** – antibiotics for the infection and supportive hospital care as needed, for example, mechanical ventilation to help the person to breathe.
- **Anaphylactic** – drugs used include antihistamines, adrenaline and corticosteroids.
- **Obstructive** – treatment to remove the obstruction, for example, surgery or clot-dissolving medication to remove the clot in the pulmonary artery.
- **Endocrine** – drugs to correct the hormonal imbalance, for example, thyroid medication to treat hypothyroidism.

Supportive treatment for 'non-medical shock' generally includes comforting the person or encouraging them to use anxiety management techniques to help manage their symptoms until the reason for their fright or fear is removed.

## Outlook

The person's odds of surviving medical shock depend on various factors including:

- The person's age and general health
- The type of shock
- The severity of the shock
- How soon medical treatment is given.

Generally speaking, hypovolaemic, neurogenic and anaphylactic shock respond well to treatment. The patient dies in about half of all cardiogenic and septic shock cases.

## Where to get help

- In an emergency, call triple zero (000)
- Emergency department of the nearest hospital
- Your doctor

For first aid training, contact:

- St John Ambulance Australia Victoria Tel. 1300 360 455
- Australian Red Cross Tel. 1300 367 428

## Things to remember

- Shock is when there is not enough blood circulating in the body. It is a life-threatening medical emergency.
- Some of the many causes of shock include uncontrolled bleeding, severe burns and spinal injury.

- In all cases of shock, medical treatment aims to restore the blood circulation and manage or prevent complications.
- Emotional distress or sudden fright in response to a traumatic event can have similar symptoms to medical shock. However, the symptoms will disappear once the person is comforted or the reason for the fright or fear is removed.

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